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Guide to Development of Structured Simulation-Based Training

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14. ABSTRACT (Maximum 200 words): The Army Research Institute for the Behavioral and Social Sciences (ARI) and the Force XXI Training Program have sponsored the development of a structured simulation-based training program for selected staffs of conventional mounted brigades. The development effort, entitled the <i>Combined Arms Operations at Brigade Level, Realistically Achieved Through Simulation</i> (and known as COBRAS) resulted in construction of training support packages (TSPs) for large-scale exercises and for small-group vignettes. Development of the scenario and all TSP materials followed the guidance found in the <i>Methodology for Development of Structured Simulation-Based Training</i> , published by ARI in 1995. The <i>Report on the Methodology for Development of Structured Simulation-Based Training Programs</i> expands the guidance found in the original methodology, based on experience in the COBRAS program. This guide contains additional examples and warnings, and more in-depth coverage of TSP construction and formative evaluations. It is intended for use by training designers and developers, as well as training program reviewers and proponents.								
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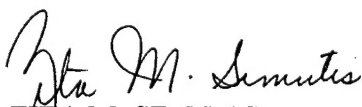
FOREWORD


This guide is intended to serve as an aid for training developers, training reviewers, training implementers, and training evaluators. It was designed to address a broad range of training development projects that all fall under the general heading of “structured training.”

All of the work that led to the codification of this methodology was performed under the sponsorship of the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI), Armored Forces Research Unit (AFRU), Fort Knox. Three separate but related training programs and the associated training support packages (TSPs) have been or are being developed using the methodology:

- *Combined Arms Operations at Brigade Level, Realistically Achieved Through Simulation (COBRAS)* — brigade staff exercises and brigade staff vignettes,
- the *Virtual Training Program (VTP)* — exercises for platoons, companies, battalions, battalion staffs, and brigades, and
- *Structured Training for the Close Combat Tactical Trainer (CCTT)* — exercises for platoons, companies, and battalions using CCTT.

Users are encouraged to “color outside the lines.” If the methodology does not address a particular need, then the creative developer will find a solution. But it is important to know what some of the lines are. This guide, in prescribing various development considerations and procedures, defines many of the important issues and design challenges that developers must confront and resolve.


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GUIDE TO DEVELOPMENT OF STRUCTURED SIMULATION-BASED TRAINING

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GUIDE TO DEVELOPMENT OF STRUCTURED SIMULATION-BASED TRAINING

This figure presents an overview of the methodology that will be described in this guide.

Key features include the *four phases* of development and the continuous nature of the *formative evaluation*.

The figure is explained on the next page.

PHASES OF THE DEVELOPMENT METHODOLOGY

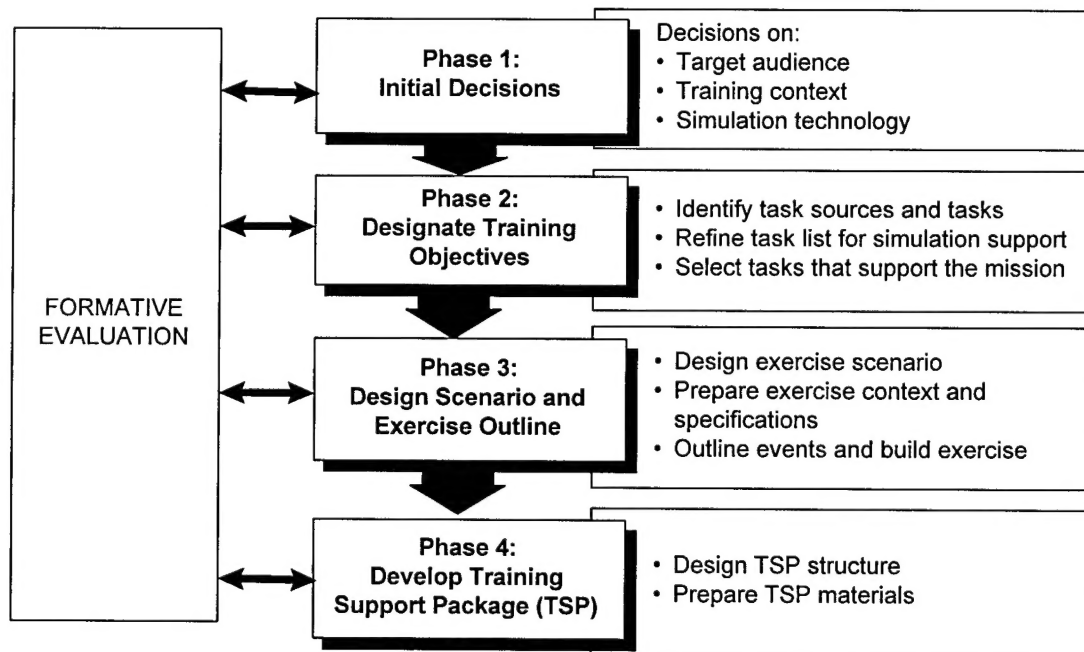


Figure 1. Overview of the development methodology for structured simulation-based training.

GUIDE TO DEVELOPMENT OF STRUCTURED SIMULATION-BASED TRAINING

INTRODUCTION TO THE GUIDE

The Four Phases in Development

There are four phases to this development methodology, as shown in Figure 1 on the previous page:

- *Phase 1: Initial Decisions*—Determine the training requirement (e.g., mission and enemy type, terrain, time constraints, number of exercise start points, difficulty level), training audience (e.g., unit type or echelon, personnel within unit), and appropriate training environment (i.e., specific simulator/simulation).
- *Phase 2: Select Training Objectives*—Focus the training on critical tasks and performance standards in support of the training requirements, and ensure that those tasks can be performed in the selected simulator/simulation environment.
- *Phase 3: Design Scenario and Exercise Structure*—Determine the limits of each exercise with reference to METT-T; generate the tactical framework for the exercises; specify the events within each exercise; define and put substance to the roles to be played by the simulation and by various types of trainers; and crosswalk the training objectives to events within the exercises.
- *Phase 4: Develop Training Support Package (TSP)*—Construct and try out all of the written and simulator/simulation-based components of the training program, including materials for the trainers and for the participating unit.

These four phases need not be done in a strictly linear fashion. The continuous attention to formative evaluation during an activity will often cause you to go back and revise the products of an earlier phase. In fact, you should regard the entire process as flexible, and be prepared to move back and forth between phases during the development, revising decisions and products as necessary. For example, understanding of the initial decisions will change as more is learned about the simulation and the tasks; information that feeds into development of the TSP will be captured during documentation of initial decisions; and so on.

Whenever decisions or products are revised, you must trace back through earlier development and correct all related products, whether they are interim products or parts of the final TSP. We cannot emphasize too strongly the importance of keeping all products current and in agreement with each other. We should also point out that this is one of the most difficult challenges in development.

The Nine Activities in the Four Phases

There are nine *Activities* within the four phases. In the guide, each phase of the methodology is introduced by a discussion of the purpose of that phase, along with a list of the activities in the phase. Each activity is then described in detail. Where it seems helpful, examples from recent development efforts have been included.

Figure 2 shows the activities in each of the four phases.

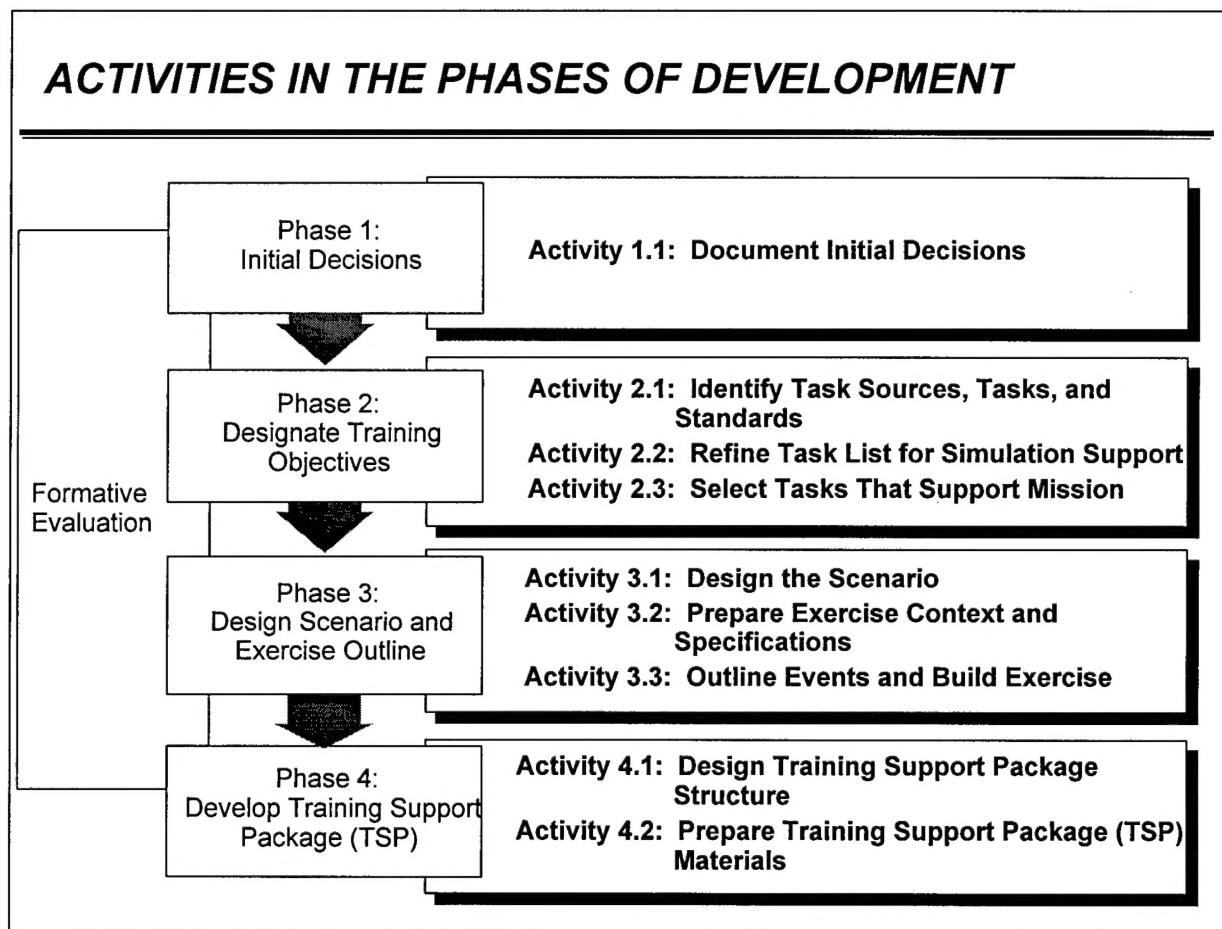


Figure 2. The nine activities in the four phases of the development methodology.

Although the guide presents a succinct procedure for developing structured simulation-based training, the guide alone will not be sufficient for development. Subject matter expertise for the selected technology, for associated military aspects (e.g., the mission type, unit type, operations, and enemy tactics), and for training and instructional design will be required throughout the development and review processes.

The Formative Evaluation

The methodology incorporates a series of required and critical *formative evaluation* steps throughout the development process. Some of these are formal (such as map exercises conducted by the design team, tryouts with representative or surrogate units and individuals, technology-driven tryouts, or content reviews with experts and stakeholders or proponents), but formative evaluation also includes a continuous attention to the need for revisions and improvements. Their purpose is to insure the quality of the product by attending to that quality throughout development; they are intended to direct attention to training utility as well as technical content.

Figure 3 presents an overview of the formative evaluation scheme.

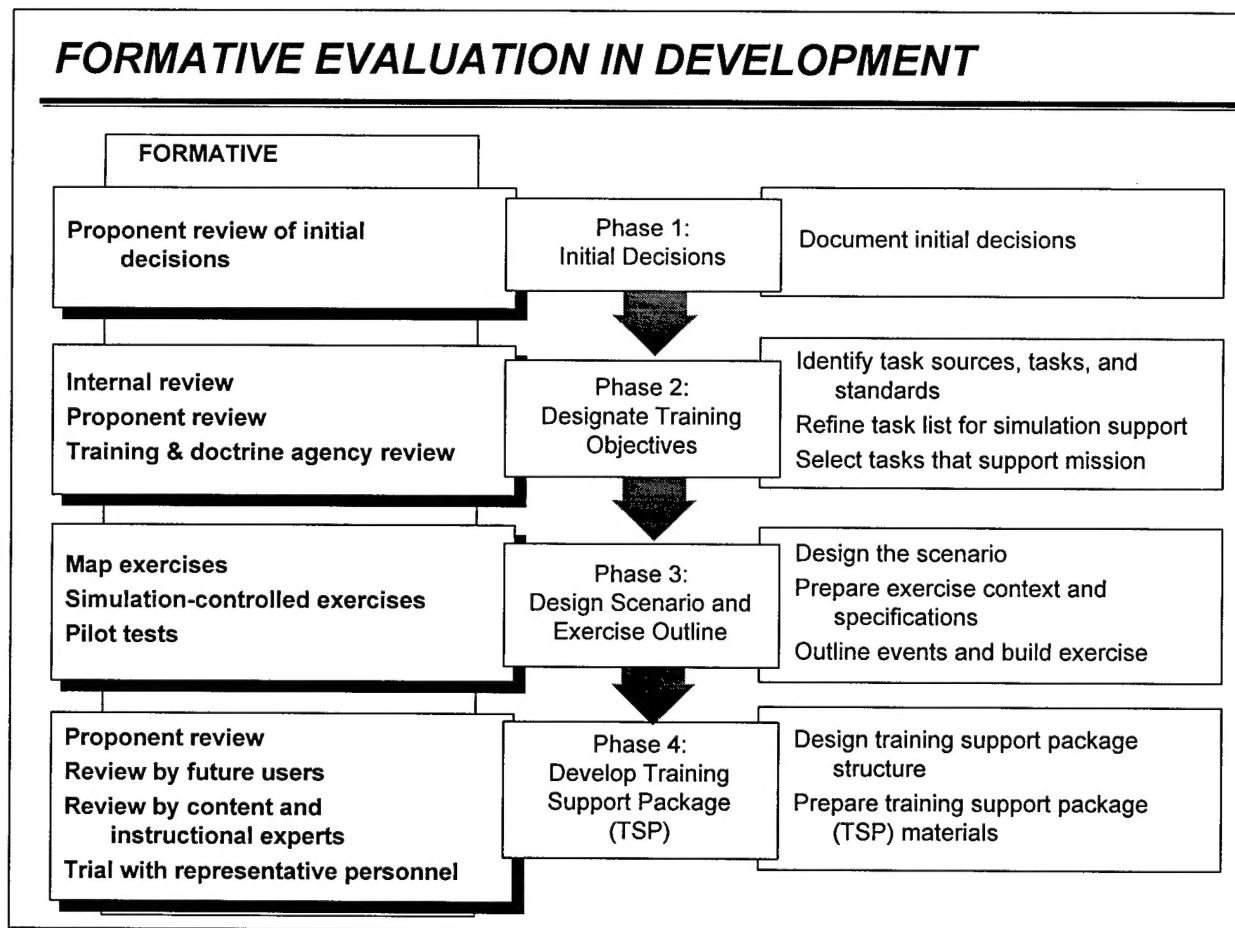


Figure 3. Formative evaluation activities in the development of structured simulation-based training.

In the guide, appropriate formative evaluation activities are described for each of the developmental activities. Each formative evaluation activity has a specific focus, appropriate to the development activity, and the information gathered is used to refine products to ensure their accuracy and usability of the products. The formative evaluation activities for each phase of the methodology include the following:

- *Phase 1: Initial Decisions*—The formative evaluation task will be to make sure that all of the parameters (the “givens”) of the proposed structured training have been examined by those who have commissioned the training. All of the directives that have been given by the training program proponent (the office or individual who is sponsoring or has directed that the development be done) should be documented by the developers and approved by that proponent. This will ensure that the development is on track with the initial intent. It is crucial that the proponent review and approve of any changes in the design and development work.
- *Phase 2: Designate Training Objectives*—Developers will be identifying the specific training objectives for the program. These are the tasks that the program will address and train, and the standards for task achievement. The formative evaluation in Phase 2 should take the form of an expert review of the selected tasks. This review should involve any offices or agencies who are responsible for doctrine and documentation for the subject matter (e.g., doctrine or training or tactics directorates). These agencies have a vested interest in the product and a responsibility for its accuracy; they are also knowledgeable and can provide valuable information and support.
- *Phase 3: Design Scenario and Exercise Structure*—The formative evaluation will become more active, involving map exercises and simulation-controlled exercises, and finally exercises with representative (or surrogate) participants (usually referred to as “pilots”). These exercises are intended to evaluate the technical content of the development, with regard to both doctrine and simulation. There is still a requirement for proponent and expert reviews of the scenario, to ensure that the evolving design is still consistent with the intent.
- *Phase 4: Develop Training Support Package*—The formative evaluation will involve representative individuals and units in trying out the program's TSP (referred to as “trials”). By this time, developers should have performed reviews to ensure that the exercises are doctrinally correct and that they are matched to simulation capabilities, and are ready to check on how usable they are and whether training occurs. These trials are extensive and require careful planning, rigorous and intensive information-gathering, and documentation of resulting actions. They are the final point of revision and require close attention to detail in order to ensure that all materials are complete and correct.

The Methodology Outline (Appendix)

The outline in the appendix presents the four phases in the methodology, and, for each phase, the activities that are to be performed in the required analysis, design, and development phases. As appropriate, some of the most important design and development considerations are also listed. For each of the activities, the outline indicates the activity's product or outcome. In many cases, the activity "product" is an item that is used in the continuing development process, rather than a piece of the eventual TSP. The outline also suggests the type of tryouts and/or expert reviews to conduct as part of the continued formative evaluation.

The appendix serves as a job aid or checklist for the development process and includes little detail or explanation. It is designed to help maintain high quality in the TSP materials. It lists the characteristics of correct and complete TSP materials. Thus, it should be used to remind experienced developers and reviewers of the critical elements of the development process and the TSPs.

<p>The procedural guide to the methodology for developing structured simulation-based training begins on the next page.</p>

PHASE 1. INITIAL DECISIONS

Activity 1.1 Document initial decisions.

In the first phase of the methodology, you will make or identify certain decisions about the training that is to be developed, and then document those decisions. Whether you are performing the initial needs analysis or simply recording the results of an already-completed analysis, it is crucial that those initial decisions be preserved. Phase 1 has only one activity—to document the initial decisions.

Activity 1.1 Document initial decisions

Product/Outcome: Documentation of decisions.

Formative Evaluation: Proponent review.

The decisions that you make, examine, and record will serve as the basis for all of the other activities. These decisions should arise out of a needs assessment, performed by you or the proponent before the remaining design work begins.

There are at least four areas of decisions:

1. **Training Audience:** The “training audience” is the personnel for whom the training is to be designed. In some cases, this will be the entire unit at the selected level (e.g., armor platoon); in most cases, the training is intended for a specific subset of the unit (e.g., battalion staff). This may seem too obvious to be noted, but it should be documented, to ensure that all parties understand the training focus. In general, you will be developing training objectives and observation protocols only for members of the training audience.

EXAMPLE: Designating the training audience

GIVEN: A requirement to design staff synchronization and integration training for selected members of a brigade staff, including the primary staff and fire support, air defense artillery, engineers, and combat service support.

Developers determined that the *primary training audience* would include the primary staff and those individuals who represent the other functions to the brigade commander. Thus for example, the Brigade Engineer was to be a member of the primary training audience.

The next-removed level of interaction, those who work within the other functions and the staff sections, would be represented by the actual role incumbents, but they would not receive the

same level of training focus (i.e., no formal observation and feedback protocol). These individuals were referred to as *roleplayers*.

Finally, the next level of activity would be represented by the simulation itself, controlled by trained *interactors*. Interactors would work under direction of roleplayers, who would respond to the primary training audience orders and provide input to the training audience as requested.

2. **Training Context:** The training context is the situation or scenario that will provide the “storyline” in which the training is set. The training context for military training programs in tactical settings will likely include the mission type, enemy type, terrain, and unit type.

- **Mission Type.** The mission provides the context for the training. The mission type will affect much of what follows, and should be specified early in the process.
- **Enemy Type.** Whether this is an actual enemy or a fictitious enemy force, the enemy needs to fight according to defined rules and tactics. You need to specify what will define the tactics, doctrine, organization, and equipment for the opposing forces (OPFOR). If the OPFOR is to represent a real enemy, then the source of that enemy’s capabilities must be identified. If the OPFOR will fight according to an approved Training and Doctrine Command (TRADOC) model, then that model should be identified.
- **Terrain.** The terrain setting that the exercise uses should be indicated in terms of the general area, such as the National Training Center (NTC), or Fort Knox, or Korea. Later you can get more specific about the precise locations where events will occur. Insure that it is available in the simulation.
- **Unit Type.** It has already been stated that the training audience should be specified. Make sure that you consider any additional defining factors. For example, if the training is designed for brigade staffs, you will want to know the type of brigade (e.g., conventional or digitized, armor or mech or light, 3-battalion or 4-battalion). One way to specify the unit type is by means of the appropriate Tables of Organization and Equipment (TOE) designation.

➤ **NOTE:** Some training exercises may not require that an enemy, terrain, or unit type be specified. Battle oriented-exercises (i.e., those that require the unit to fight against an enemy during the exercise) will require a well-defined enemy, terrain, and unit type. But exercises that work on staff interactions, non-battlefield activities (such as those that occur in assembly or rear areas), or certain aspects of planning processes, may not require such a fully developed mission, enemy, troops, terrain and time (METT-T). Examine the training environment carefully and continue to examine it as the exercise matures, in order to be certain that all necessary specifications have been addressed, decided, approved, and documented.

3. **Simulation Technology:** If there are different versions of the simulation software, document which version is required for the exercise. Although you will do a detailed analysis of the technology capabilities in Activity 2.2, you should at this point verify that the selected technology is suitable for the type of training that you are designing. For example, you would not use SIMNET or Janus for gunnery training; you would not use mobile SIMNET for brigade-level training. Additionally, you should find out as soon as possible what version of the simulation technology is going to be available for the intended users of the training.
4. **Other Considerations:** Depending on the particular development project, there may be other considerations. These may include exercise time, number of scenario entry points, nature of entry points, linkages to other programs, particular training emphases, availability of trainer resources, and so on.
 - **Exercise time.** Every training implementation will have to be conducted within certain constraints; time constraints are the most immediate and apparent. You need to identify a realistic target for exercise duration, so that the unit can use the program. This estimate of available training time allows you to determine the tasks that can be addressed in the training.
 - **Number of entry points.** Exercises (and TSP materials) that are structured with multiple entry points give units some options concerning where they can begin and end their training. However, it will not always be feasible to structure exercises this way. If, for example, you are designing exercises for a staff or staff section, you may find that the flow of events is so continuous that it is extremely difficult to generate all of the relevant cues and conditions for the entry point and design a method for getting training participants and controllers read in on those conditions. Thus, starting an exercise at different points may be very difficult for both the training audience and the exercise controller, and could cause an unacceptable decrement in training value.
 - **Nature of entry points.** If the mission is to have multiple entry points, it should be decided whether the entry points will be based on the unit's expertise (proficiency-based) or on training emphasis (needs-based). Proficiency-based entry points require that associated pieces of the exercise be at varying levels of difficulty. Needs-based entry points assume that the exercise segments will focus on different skills or activities. The determination will shape certain pieces of the TSP, particularly those that are used by the unit to select its training options.
 - **Linkages.** There may be a requirement to link several training programs by putting them on common terrain, making them part of a higher level mission or campaign, or making them represent different aspects of the same mission (e.g., fire support, logistics). Once any such linkages are identified, the development efforts should be planned and constructed in such a way as to ensure that all of the related efforts can satisfy their training goals while satisfying the requirement of commonality.

EXAMPLE: Working with required linkages

GIVEN: A requirement to design training for battalions that used the same scenario (METT-T) as previously developed platoon and company exercises.

In order to establish the links, developers adopted the battalion-level OPORD that had been developed as the overarching context for the company and platoon exercises. This ensured that the mission, enemy intelligence, terrain, and task organization would be congruent.

However, the company and platoon exercises had been carefully designed so that the unit in training would get all the action. Developers had to point out that no one company or platoon within the battalion would encounter all of the activity that they would during their own exercises, even though the unfolding battle should be the same; the activity would be distributed among all of the participating companies and platoons.

- **Other Training Priority Guidance.** Examine and document any training-specific guidance that you have been given. For example, your guidance may be restrictive with respect to the specific focus of the training, such as emphasis on combat service support (CSS). Consideration of where the program is intended to fit within the training strategy will also help to define the scope. As you define the range of training options, examine and analyze the choices available in order to help focus the training intent.
- **Trainer and Other Resources.** Know what training resources you are expected to plan for. For example, you may be able to plan on the use of a dedicated training cadre or observer/ controller (O/C) team, or you may need to design for a “pick-up” team of observers. The training program may be destined for a single implementation site, or you may be developing a completely exportable package. Implementation options may include some field deployment of participants or minimal physical realism. Training time may be limited to 8-hour blocks, or you may be asked to design for continuous, 24-hour operations.

The input for this activity may be external to your training development efforts. It is possible that the requirement to develop training for a particular type of unit, mission, and simulation will be specified for you by the proponent. In other cases, the proponent will rely on you, the training developer, to identify alternatives and make recommendations.

As you go on, you may need to revisit the decisions that have been made. Inconsistencies between and among training program components may emerge and require resolution. For example, you could discover that the capabilities of the selected technology are not sufficient for the intended unit size or mission type.

In the development methodology, this first activity and its product serve as input to all other activities. The decisions that you document are central to virtually every activity in the remainder of the development process. They form the basic structure for the exercises, serving as the basis for your development objectives. For that reason, it is essential that you make sure

that the decisions are (1) clearly spelled out, and (2) available to and understood by the design/development team.

Formative Evaluation

At this very early stage, the most useful formative evaluation will be conducted in a briefing to the training proponent. Your goal is to get concurrence on the decisions made, so the briefing should present those decisions and the reasons, as well as any outstanding issues to be decided. This will help to ensure that your design and development efforts are in accordance with the intentions of the proponent.

This phase assumes that a needs assessment or front end analysis has already been conducted, and that it is the basis for these initial constraints. If it has not, it is incumbent on you to request (or perform) the analysis. Additionally, now is the time to examine any decisions made on the basis of the analysis, and identify for the proponent any that may have negative consequences. Your understanding of and relationship with the proponent will help you decide whether you can challenge the decisions or the analysis itself.

By the same token, ensure that both the proponent and the design and development team have thought about the implications of the decisions. The initial design phase can be an exciting time, with seemingly boundless opportunities for innovative approaches and ambitious (even grandiose) plans. Try to anticipate the efforts that will be required to carry out those plans, and be willing to modify those plans if they turn out to be unrealistic in execution.

PHASE 2. DESIGNATE TRAINING OBJECTIVES

Activity 2.1 Identify task sources, tasks, and standards.

Activity 2.2 Refine task list for simulation support.

Activity 2.3 Select tasks that support the mission.

During this phase, you will determine the tasks that will be the focus of the training program. The three activities will involve finding sources of information and extracting the complete task list (Activity 2.1), refining the list to include only those tasks that can (or should) be trained using the selected simulation (Activity 2.2), and then further refining the list to include only those tasks that also support the selected mission type (Activity 2.3).

Either of the two refinement activities (2.2 or 2.3) can be done first. It makes sense to do the one that you expect will result in the most drastic cuts first, so that you can avoid reviewing a large number of tasks in one activity that get set aside in the next activity. The final list, indicated as the product of Activity 2.3, should reflect the results of both activities, no matter which one you do first.

The goal in this phase is to develop a list of tasks that serves three purposes:

1. It provides the performance structure around which the scenario will be constructed.
2. It is the foundation of the observation and feedback mechanism within the exercise.
3. It defines the training objectives for the intended users.

Activity 2.1 Identify task sources, tasks, and standards.

Product/Outcome: Tasks and standards; task sources.

Formative Evaluation: Internal and proponent review. Training and doctrine agency review after tasks are selected (both Activities 2.2 and 2.3).

The first activity in Phase 2 involves identifying task sources for the unit type and echelon, and then preparing a complete list of all of the tasks.

For Army training projects, the most obvious task sources are the Army Training and Evaluation Program (ARTEP), Mission Training Plans (MTPs) and field manuals (FMs). Other sources include training materials prepared by the proponent agencies and task lists developed by the proponent schools. Consider and examine all sources that are known or suggested to you. You might not use them all—they may be redundant or in an early development stage or out of

date, for example. You should keep a record of all sources considered and the reason you did not use particular sources that you considered (in case there's a question later).

Make sure that you have the most recent approved versions. If you know that another version is coming out soon, you should review the draft if you can, see what differences there will be, and then get a decision as to whether to use the current or the emerging version. Your decision will depend on when the change or update will be released and how vast the differences are. Using a different version during development than the training audience uses can cause confusion when the program is implemented.

For a source to be useful, it must contain tasks for the mission type and for the unit type and echelon (the METT-T specified during Phase 1). The tasks must clearly describe how to perform, under what conditions, and to what standard. Sometimes, information from several sources can be combined to yield complete task analytic information. But if you are using multiple sources, check your final list of tasks for redundancies and cases in which certain tasks are actually subtasks of others (a more subtle form of redundancy).

As you read the task analytic materials, you will need to identify:

- *Tasks*—lowest level of collective behavior that has accompanying conditions and standards. (In some sources, these may be called subtasks or task steps.)
- *Conditions*—description of situation, environment, and initiating cues that should cause a task to be performed.
- *Standards*—statement of correct accomplishment of a task.

You will usually be expected to use tasks that can be documented in official sources (e.g., ARTEP-MTPs). Because your objective is to design training that uses task analytic information accepted by the organization, it makes sense to use existing documentation when possible. A multiplicity of task lists that are only different because of personal preferences only serves to confuse training strategies.

EXAMPLE: Discovering task sources (or, the exception that establishes the rule)

GIVEN: A requirement to design training for brigade staffs that stresses synchronization and integration.

In this project, the tasks were *not* limited to official sources. Instead, they were derived from a controlled job analysis process involving performance of segments of the exercise, roleplay, diary-keeping, and documentation.

The product for Activity 2.1 is a fairly comprehensive list of tasks that describe the expected behavior of the training audience, as found in the source documents or derived by some other proponent-accepted process. In Activity 2.2, the list will be refined in order to determine which tasks can be represented on the simulation.

Your work in preparing the task list is not likely to cause revisions to the initial decisions unless the quality of task analytic information is so poor that structured training for the selected mission and/or unit cannot be developed until the quality of the task analysis is improved. It is also unlikely that you will have to revise this task list later, unless other sources of task information are discovered, or doctrine or proponent guidance changes during development.

Formative Evaluation

As you complete the list of tasks, the formative evaluation should be an internal process—you are reviewing and updating your own work. Once refinements to the task list are completed in Activities 2.2 and 2.3, you should request a proponent review and a review by the appropriate doctrine and training agencies.

Activity 2.2 Refine task list for simulation support.

Product/Outline: Task list annotated to show tasks that can be fully or partially performed and observed in the simulation.

Formative Evaluation: Internal and proponent review. Training and doctrine agency review after tasks are screened for simulation support (this activity) *and* mission support (Activity 2.3).

This activity requires you to make judgments about which tasks can be included in the training, based on simulation capabilities. You may find many tasks that you want to train, but that cannot (or should not) be trained using the selected simulator or simulation. Some tasks can be partially represented, and you will have to judge whether those parts are critical and are well enough represented to justify their inclusion in the training.

The refining process uses the task list from Activity 2.1. If you have already done the mission screen on that task list (Activity 2.3), then the resulting reduced list will serve as your starting point. In order to make the judgments of whether or not each task should be included, based on simulation capability, you need a rule-based system that specifies the basis for the decisions. It is *not* sufficient for you to simply look at tasks or subtasks and decide whether or not you feel that they can be represented on the simulator/simulation. And you should have at least two people *independently* make ratings of task suitability. Afterwards they can work together to arrive at a consensus.

EXAMPLE: Screening tasks

GIVEN: A requirement to design SIMNET-based training for platoons

Developers modified an approach developed by Burnside (1990) to screen ARTEP-MTP tasks for training on SIMNET. To use that approach, suitability judgments are first made at the lowest level of task detailing (i.e., subtask standards) and then the ratings are aggregated to higher levels (subtask or task). Developers then follow a set of rules to determine task trainability. In this effort, developers aggregated ratings of subtask *standards* only to the *subtask* level, rather than to the *task* level. This permitted them to make judgments of trainability at the subtask level and thus cover parts of tasks in the exercises.

Keep in mind that a great deal of live simulation can go on around a constructive or virtual simulation exercise. If a task isn't, strictly speaking, supported by the simulation, but it *can* be performed, observed, and evaluated "live," then it may be a good candidate for inclusion. The simulation-based training can provide a rich environment for performance of tasks that are not themselves simulation-supported.

As you work through this activity, you will have to be, or have access to, someone who is *very* familiar with the capabilities of the simulator/simulation. It will not be enough to look at the capabilities descriptions provided by the vendor, nor to take the word of the development engineers and technicians. There is no adequate substitute for first-hand knowledge of how the simulation works. Unless you yourself are expert on the simulation, you will need to work closely with a technician who can demonstrate the functions that you need to replicate.

The work on this activity should not require you to revise earlier work (i.e., Activities 1.1 and 2.1, and possibly 2.3) unless it turns out that no tasks survive the cut and the technology is totally inappropriate to the unit type or mission. The decisions made in this activity on the basis of simulation capabilities should only change in reaction to upgrades to the simulation technology or further information about capabilities (i.e., experience that shows that the capabilities are not what you thought they were).

Formative Evaluation

The formative evaluation requirement still includes reviews performed by you and other developers on the project. When both Activity 2.2 and Activity 2.3 are completed, you will set up a more formal review by others who are familiar with the simulation, the tasks, and the needs assessment.

Activity 2.3 Select tasks that support mission.

Product/Outcome: Reduced task list, annotated to show the tasks (or parts of tasks) that should be performed in the context of the mission, along with appropriate conditions and standards.

Formative Evaluation: Internal and proponent review. Training and doctrine agency review after tasks are screened for simulation support (Activity 2.2) *and* mission support (this activity).

At this point, you are ready to decide which tasks the training should include, based on whether they are appropriate to the mission selected. Tasks and standards that are on the list that you prepared in Activity 2.1 (and that passed the simulation screen in Activity 2.2 if that has already been done), should now be examined in the context of the mission type. The product of this activity is the list of training objectives that support the selected mission.

In addition to the type of mission, there may also be other mission-related considerations. For example, maybe you have been told that exercises need to incorporate close air support, or extensive use of indirect fire, or should not incorporate any static defense. Or you may be given a general focus, such as NTC training needs and deficiencies, or the commander's guidance or mission-essential task list (METL) emphasis. You should tailor the task list according to any of those "other" constraints or guidelines imposed on you by the proponent, to ensure that the appropriate tasks are included.

The list of tasks and standards, screened for simulation and mission support, now represents the training objectives. This list is used in the activities in Phase 3, where you will construct the tactical scenario that will require units to perform the tasks. As you develop the scenario, you may find that not all of the selected tasks can be included in a single scenario. If you decide later that you will not train a task after all, *make sure* you revise the task list and make a note of the reason. For your own reference and for future development work, it is important to maintain an audit trail on why specific tasks were or were not selected.

Formative Evaluation

Once the list is finalized (or temporarily finalized), and you have done another internal review, you will want to get proponent concurrence on what will be trained. A briefing will let you describe the procedure you followed, explain and defend your decisions, and get approval to proceed with development. You should present complete task descriptions, and be prepared to show the tasks that were rejected and why (e.g., didn't support the mission or not supported by the simulation). You should also try to involve any interested training and doctrine agencies, so that their early concurrence is obtained.

PHASE 3. DESIGN SCENARIO AND EXERCISE STRUCTURE

- Activity 3.1** Design the scenario.
- Activity 3.2** Prepare exercise context and specifications.
- Activity 3.3** Outline events and build exercise.
-

During this phase, which mirrors the *Design* phase of the Systems Approach to Training (SAT), you will plan and outline the tactical scenario that will be the context for the exercises, and make decisions about the exercise structure for the training. This is a lengthy phase, comprising three activities.

Throughout the three activities, give some thought to *task sequencing*. Even though the unit will be performing tasks in whatever sequence the scenario requires, you may have some flexibility in designing the scenario so that tasks will occur in an order that you control. The most likely sequences that make sense from a training/learning standpoint are crawl-walk-run, natural order, hierarchical order, and easy-to-difficult. The intent of each of these is as follows:

- *Crawl-walk-run*—Tasks are repeated several times (technically, three times) under increasingly demanding conditions, in order to hone the unit's performance skills. Conditions are usually made more demanding by changing the mission, increasing the enemy strength or capability, or requiring the unit to perform in more challenging terrain, less time, or lower readiness levels (the five METT-T elements). This sequencing provides opportunities to reinforce training and to work toward automation in performance (i.e., making performance more automatic, as is the goal with contact and battle drills).
- *Natural order*—This sequencing anticipates performance of tasks in the normal order in which they are performed. This sequencing will generally happen without explicit effort because of the tactical context in which the exercises are embedded. Just as the events follow a natural chronological order, because they occur within the framework of the start-to-finish mission, the tasks for a given unit will be required in a chronological order. This does not imply that this is the best order for learning tasks, but it does provide a structure for performance cueing that reflects real world requirements.
- *Hierarchical order*—Tasks are examined to determine whether any of those selected actually contribute to, or are subtasks of, other tasks. For example, being able to execute a line formation is required in order to execute an action drill. The mission scenario itself would be designed to permit early focus on lower level tasks in the hierarchy, and later emphasis on the higher level tasks. In order to make this happen, however, you need to determine what the hierarchical relationships are.

- *Easy-to-difficult*—Tasks are rank-ordered according to difficulty, and the exercise or segments are designed so that easy tasks are required first, and more difficult tasks are gradually introduced. The advantage provided is that units have time to adjust to the training environment before they are required to perform the more difficult tasks. The disadvantage is that you need to obtain ratings of task difficulty somewhere, either from subject matter experts or from other research. There is little evidence to suggest that learning occurs better using this sequencing, unless it is incidentally supporting one of the other three sequencing schemes above.

It is unlikely that you will have a stated directive for sequencing. All of the sequencing principles described above are appealing, and even seem to be redundant in some cases. You may decide to work with just one approach, or to use different approaches for particular tasks and parts of the training.

This process of structuring the scenario also serves to clarify the task standards, from the general levels usually found in ARTEP-MTPs to very specific METT-T-driven standards. For each of these structuring considerations (i.e., incorporating realism at higher levels, using documented enemy tactics, using selected terrain, maintaining the flow, and sequencing) you should consult the proponent before continuing with this phase of development.

With more complex scenario situations, it will not be a simple matter to go beyond natural order in sequencing of particular tasks. However, whole segments of scenarios, encompassing a large number of tasks, may be structured so as to increase the difficulty of conditions or to take advantage of multiple task hierarchies.

Activity 3.1 Design the scenario

Product/Outline: Draft of the "concept of the operation" with sketch of graphic overlay, draft of unit operations order (OPORD), or other representation; for training unit and higher echelons as necessary.

Formative Evaluation: Map exercises

If you have been using the methodology as presented up to this point, you now have the selected task list, showing which tasks can and should be trained in the context of the mission scenario that will be designed. You also know about any other constraints on the design, such as the amount of time available, the need for stand-alone exercise partitions, sequencing preferences, the nature of the enemy, and the general area (terrain) where the exercise will be conducted. You have probably already begun to form the tasks, unit, enemy, and terrain into an exercise or series of exercises.

Because structured training requires that the exercise should be presented in the context of a credible situation, you will be concerned with *realism* in all aspects of the exercise. For battle-oriented exercises, realism requires you to develop the mission scenario for the training unit level and for one or two echelons up (e.g., platoon-level exercises require supporting mission outlines for company- and battalion-levels). The higher echelon missions are developed because (1) the process ensures that the unit's mission is sound, and (2) the higher-order information is needed as you prepare scripted messages and other inputs to cue the unit's performance. Mission scenarios will generally be presented in the form of operations orders (OPORDs).

For exercises that focus on skills that are less directly battle-oriented (e.g., decision-making, planning), the realism will be ensured by means of various tactical products or messages that cue the performance of the selected tasks. While these will be based on a well-thought-out mission, you may not need to develop the complete OPORD.

Similarly, the enemy (if there is one) should be realistic. You specified the enemy type in Phase 1, and you need to follow through on that decision in prescribing the enemy capabilities and tactics in the exercises. That is, the enemy needs to be configured and to behave in the exercises according to some model. Make sure that the enemy to be presented is doctrinally appropriate for the size, composition, and mission of the unit being trained.

In order to maintain the realism of a battle-oriented exercise throughout its execution, you should develop the entire scenario for a designated piece of terrain, and make the exercise move across that terrain in a real-time, real-space fashion. In this approach, the entire battle or series of battle events will occur in the exercises as a continuous flow on a (large) selected piece of ground. If different pieces of the exercise occur in separated locations or times, it may require additional narratives explaining how the unit got where they are, which could result in breaks in the flow of the battle and other awkward side-effects.

However, if you find that the missions or operations require extensive terrain or long periods of time in order to incorporate all of the tasks, and that there are long periods of non-training time (i.e., road marches may not be part of the training objective list), then one solution is to deliberately break up the mission into smaller partitions of the mission. Each partition then focuses on specific tasks, occurs on specified terrain during a specified time period, and may be separated from the other parts in time, space, or other conditions.

Finally, realism extends to other "friendly" personnel or units. In battle-oriented exercises, you will need to generate representations of higher echelon units and supporting, subordinate, and adjacent units. Similar representations will often be required in other types of exercises as well, to provide the cues that drive performance.

The requirement in Activity 3.1 is to prepare an outline or draft of the training unit's mission. This product could look like a concept of the operation, or a course of action, or a sketch of a map with notes to indicate what will happen where. For some exercises, the actual ground where the battle is fought is important, but the selected tasks are not performed on that

ground. For example, in battalion staff training, the staff generally stays at command post locations throughout the battle, rather than being out on the battlefield. As a result, you may also need to prepare a matrix to indicate what events should happen, and what the enemy, the controlled (notional) units, and the training unit should be doing.

Your product needs to indicate the initial unit and OPFOR locations, major events, participants (friendly and enemy), and the area of terrain that will be used. As you do this, keep in mind that you may also need to develop the supporting mission for one or two organizational levels (or echelons) up, so the final training scenario for the training unit needs to have realistic counterparts at the higher levels. Within the product, make some notation of when and/or where the selected tasks (from Phase 2) are expected to be performed in the course of the execution.

For a battle-oriented exercise, the products may include any or all of the following:

- description of the mission, commander's intent, and concepts for any combat support (CS) and CSS assets that are included in the exercise;
- situational template that shows your plan for the enemy (i.e., location, objective, mission, intent, and course of action);
- plan for the terrain that will support the mission (area of operation); a rough sketch of the graphic overlay of control measures for the mission; and
- scenario event timeline showing the activities of both friendly and enemy forces.

This activity and the next one (i.e., Activities 3.1 and 3.2) are closely tied and interdependent. You should check frequently on the correspondence among the training unit's activities or mission, the higher levels' activities or mission, and the detailed scenario outline (Activity 3.2), in order to make sure that they are tactically correct and fully coordinated.

The work on this activity (in conjunction with the next two activities) might result in changes in products of earlier activities. For instance, you may find that this product does not trigger performance of all of the selected tasks and that you are unable to adjust it so all tasks can occur in a tactically realistic scenario. In that case, you need to go back to Activity 2.3 and correct the selected task list so that it is accurate with respect to tasks that are going to be trained.

Formative Evaluation

In order to check on whether the product supports all of the selected tasks, and to verify that the mission is tactically adequate, you should conduct a map exercise of the mission. This will ensure that the terrain selected is appropriate and that the operational concept is rational and intuitively acceptable. Use content experts in this process, so that you get other views of whether the mission makes good tactical sense.

As with any map exercise, you will be examining the reasoning behind the tactical plan. Specifically, you will be examining every decision made concerning the unit's mission, the higher-order mission, and the intended enemy behavior. You and the other reviewers must

rigorously scrutinize and challenge each decision at this point, in order to avoid rewriting and changing things later in development when the products are more intricately interdependent.

Activity 3.2 Prepare exercise context and specifications.

Product/Outcome: Context, specifications, and execution details for exercises.

Formative Evaluation: Simulation-controlled exercise.

In this activity, you will prepare the context statements, initial unit specifications, and execution descriptions for the exercise or exercise partitions.

If you are going to partition the mission within the exercise, you should consider two things: logical stopping points within the exercise (e.g., initial enemy reconnaissance elements, trigger points, phase lines, or mission transition points such as a battle handover to defeat enemy attack), and the desired length of each segment. Look for breakpoints that are plus or minus 15 minutes of what you really want; estimates at this point are usually not very accurate, so be flexible. If it turns out that some of the segments are too long or short, you may shift the breakpoints or move performance cues and events from one segment to another.

Even if you are not partitioning the exercise for purposes of providing alternative entry points, be cautious of allowing a long period of time to go by with no after action review (AAR). There will be too great a chance that proficient performance will not be reinforced, that nonproductive behaviors will not get corrected, and that important learning points will be forgotten by the time the AAR occurs.

Using the task list (from Phase 2) and the draft scenario (from Activity 3.1) as input, draft a narrative or graphic description of the exercise (or of each partition of the exercise), including starting and approximate ending locations, the events that will occur, and the tasks that will be performed by the unit. If you are working with partitions, check to be sure that they are of the appropriate length (estimated) and that they reflect the sort of sequencing that you want. The time length that you're aiming for was decided earlier, in Phase 1.

You will probably begin to formulate the intended cues that trigger task performance as you go through this process. Activity 3.3 will direct your attention to the specification of cues, whether they are provided by the simulation, by means of scripted messages or contrived events (higher command or OPFOR), or by other participants. Make a note of them as you go along, because you will certainly need them later.

In addition to the narrative and/or graphic representation of the exercise, there are five kinds of information that you should document for battle-oriented exercises:

1. *The friendly and enemy situations.*

- Describe the friendly situation for the training unit and for any higher, subordinate, or adjacent units whose actions will cue the training unit.
- The enemy situation should include the enemy capabilities, organization, scheme of maneuver, and plan or intent. The descriptions should be enough to generate the appropriate intelligence reads that will cue the training unit's intelligence staff.
- Prepare a short description of the immediately preceding events that brought the forces to this point. If the exercise is partitioned, this will be a description of what should have happened in the one or two immediately previous segments; if you aren't partitioning it will be what happened immediately before the exercise started.
- Start now to think about how you will bring the unit's knowledge of the enemy up to a realistic level. In the next phase, you will prepare the intelligence summaries, estimates, and narratives that are the key documents for telling the unit what they would know at the exercise's start point.
- Specify the starting points for all of the represented units in terms of approximate location (4-digit grid or control measure).

2. *Unit specifications.* You will need certain information for all of the represented units, vehicles, weapons systems, and so on.

- Identify every friendly or enemy unit that needs to be represented in the simulation. Give each of those units a unit identifier, tell how they're organized, and tell how they'll be represented (e.g., voice, simulated, notional, or scripted).
- For any virtual simulation systems or vehicles that will be operated by humans, give complete initial specification (e.g., system number and type, call letters, location/azimuth/formation, maintenance/fuel/ammo status).
- Develop the specifications for each automated or semi-automated system (e.g., unit type, system number and type, friendly/enemy, location/azimuth/formation, capability). Even if you are an expert on the simulation technology, you need to have another expert review your products to make sure that you have specified values for all parameters or used the appropriate defaults.

3. *The ending point.* For the exercise or for each partition, decide on the ending, in terms of the approximate location and the event or condition that signals the end point. In most cases, because the exercises are in scenarios, achievement of a task standard will *not* be the indication to end a segment. The scenario (i.e., segment of the mission) will usually continue to a logical ending.

4. *Scenario description.* This should be more than just a mission title (e.g. movement to contact), but less than a list of tasks and performance objectives. The intent will usually give a brief description of the exercise conditions (e.g., heavy indirect fire, light enemy contact, severe time constraints) as well as a statement of what the unit does in terms of what you want them to learn. It is used to introduce the exercise to potential users.

EXAMPLE: Describing the scenario

GIVEN: A brigade staff vignette on planning Nuclear, Biological and Chemical (NBC) defensive measures

The scenario description was to be included in the training materials, to assist training planners in understanding the vignette scope. The description read as follows:

"This exercise takes place while the brigade is planning an area defense. The commander has provided a friendly course of action (COA) for the staff to synchronize. The staff has partially completed mission analysis, and the S3 has decided to further analyze the mission in the area of NBC defense before continuing with COA analysis/wargaming. The staff will identify and analyze the probable NBC threat to support the enemy COA and will identify NBC defense measures to counter the threat."

5. *Tasks/training objectives.* Finally, attach a listing of the tasks (Phase 2) that are the focus of the exercise of each partition of the exercise. This will help to demonstrate to users and proponents that the exercises do, in fact, provide task coverage and focus.

Formative Evaluation

You should conduct another quality check on the feasibility of the details and specifications that you selected in Activity 3.3. This time, you should go to the simulation to try out parts of the exercise. Use whatever automated or semi-automated features are available; the goal is to try out the exercise requirements in simulation, while including human players as little as possible (so as to reduce human error and variability). The purposes of the tryout are to:

- verify that everything can be represented on the technology;
- verify that the exercise works on the terrain; and
- ensure that all capabilities, friendly and enemy, are set appropriately.

In order to do this formative evaluation, you will need to build the preliminary files for the simulation. Although it will depend on the technology you use, the simulation files may include starting conditions (the specifications listed in Activity 3.2) and may also include routes, graphics, decision points, and so on.

You need to do these preliminary tryouts using the simulation before the tryouts with soldiers (Phase 4).

Activity 3.3 Outline events and build exercise.

Product/Outcome: Master event list showing cues, expected performance, and critical tasks or subtasks; simulation files.

Formative Evaluation: Pilot with knowledgeable personnel.

This activity will lead you through the requirements for specifying all of what goes on during an exercise. The events within the exercise must be carefully controlled so that they will occur when required in order to provide the conditions for training. "Events" are defined in terms of the cues or trigger points that cause the unit, enemy, or other entity to take action, and the expected response. Note that it is entirely possible for the unit's reaction to trigger the next event by causing the enemy or higher level to do something, which, in turn, causes the unit to do something else. For each event in which the unit acts, the specific training objectives (i.e., critical subtasks and standards) should be designated.

The input for the activity is the draft scenario description (Activity 3.1), as well as specific information about the conditions for the exercise (Activity 3.2), such as starting and ending points and the initial configurations of the unit and enemy. The purpose of this activity is to add content to that initial outline. You will be producing the master event list (which serves as the storyboard for the structured training exercise), and refining the simulation files based on that storyboard.

For each event in the exercise or segment, your master event list should include decisions on:

- what will start the event (e.g., an order to move out, a flight of helicopters, unit reaches a particular control point); and how it will be provided (e.g., a scripted message from the higher headquarters roleplayers);
- what the unit's response should be (e.g., move out in column, active air defense, report); and
- what critical task you want to observe, and what it should look like.

Note that the unit's reaction to the starting cue could be the cue for another action that might be the cue for the next event. It might also be the cue for some enemy action (e.g., when unit crosses the line of departure [LD], send enemy patrol on the route from NK215885).

The longer the exercise (especially if you don't have partitions), the more different directions it can take, and the harder it becomes to make a definitive events guide. But the intent of *structured training* is to provide the conditions for the unit to learn specific things in a rational

(not random) order. Repeated practice under standardized conditions limits performance randomness and makes it possible to identify changes in performance and lingering performance deficiencies. These judgments of improvement or deficiency are made by reference to the task standards. It is important, then, to work at making things happen your way, rather than throwing the unit in and letting things happen as they will. The Phase 4 trials will help you capture the likely unit actions and verify that you have anticipated and represented the most probable flow of the mission.

When you select the critical tasks for an event, be conservative. Try not to recommend observation of more than about four or five tasks at a time. Experience in several projects suggests that this is about the limit for careful observation. These are the tasks or behaviors that you are directing the exercise observer to evaluate and discuss in the AAR. Be selective, and pay attention to the sequencing. For example, after you have called for observation of a platoon executing a line formation in two events, you might direct observers to watch for something else, something more difficult, in the next contact drill.

It is recommended that you call for observation of a task in more than one event. If you require it in several successive events, the observer can watch for consistency in performance, detect trends, allow the unit to learn from experience, or directly coach the unit on how to improve. Avoid the use of "global tasks" (i.e., tasks that are performed and that the observer is to watch for at all times rather than at specific times). The most likely result is that they will not be observed at all. Instead, focus on a few places where the tasks can best be observed.

On completion of this activity, you will have a draft of all of the design documents for the exercise and segments. This is the information that forms the basis for the development of the exercise package components in Phase 4. If you discover, as you develop the exercise components, that need to change or rearrange the events, you should revise your outline accordingly. It is a document for the record, and keeping everything current and in agreement will help you in making all of the products in Phase 4 agree.

If you ever have to revise these events, make sure that you go back and check the other elements to verify the correctness of all of the pieces. Everything is interrelated now, and a change at any point can cause other changes to cascade through the entire design.

Formative Evaluation

The formative evaluation for this activity is two-fold, comprising internal reviews and pilot tests. In the internal review, you should make sure that all of the pieces—mission narratives, overlays, outline with context and specifications, events, and so on—are in full agreement. One way to do this is by involving several interested colleagues who are knowledgeable about the unit and mission, and have them walk through the entire operation while you observe and take notes.

The second formative evaluation activity is to conduct another series of tryouts of the exercise, this time with more players. These are usually referred to as *pilots*. This is probably

the first time that you will bring together the scenario storyline, the simulation components, and live participants. Your players should be individuals who are knowledgeable about the subject matter (the mission, unit type, operations, etc.); they may be representative of the target audience, as individuals or as a group (i.e., each one has battalion staff experience *or* they are an intact battalion staff). If possible, try to involve people who are attuned to instructional design considerations.

If you have been using the intended observers as subject matter experts already, you can ask them to participate in the pilot as observers. But if they haven't been involved yet, don't bring them in for their first time right now to act as observers. During pilots, you want to standardize everything except the live participants and their execution attempts. You don't really need "observers" to act as performance evaluators; you need formative evaluators who can help to discover whether or not the scenario is constructed properly.

Your main objectives in the observations in these pilots are to determine whether:

- the scenario and order are tactically appropriate for the terrain and events,
- the exercise specifications for other units, friendly and enemy, are correct,
- the terrain locations permit the exercise to unfold as you intended,
- the event cues cause the right (i.e., intended) things to happen,
- the critical performances are observable by prequalified observers (i.e., the developers), and
- the performance standards are clearly stated and achievable.

Although you should be able to test much of this before the pilots, you are now doing a more complete run to check on how the pieces fit. You should be observing, taking notes, and debriefing all of the participants (players and controllers), rather than participating. If considerable changes are made as a result of a pilot, you should repeat the pilot using the revised exercise.

As you plan for and conduct the pilots, you should have a detailed plan for how they will be conducted, who will be involved, how you will obtain information (e.g., questionnaires, interviews), and how you plan to use the information. There are numerous publications on conducting program evaluations. Several of the ARI-sponsored projects have used the *Evaluator's Handbook* (Herman, Morris, & Fitz-Gibbon, 1987) as the starting point in designing pilot test plans.

PHASE 4. DEVELOP TRAINING SUPPORT PACKAGE

Activity 4.1 Design training support package structure.

Activity 4.2 Prepare training support package materials.

This is the final phase in the development methodology, wherein you will actually develop all of the components associated with the structured training program. To a great extent, this process began when you first began to list the tasks (Phase 2) and prepare the scenario materials (Phase 3). This section describes how to translate that earlier documentation into the final products.

In order to do this, you need to know what the implementation situation(s) will be and what the materials need to help the implementers to do. By “situation,” we mean the constraints and resources available for implementation at the site or sites where the program will be used.

EXAMPLE: Defining the implementation situation

GIVEN: Platoon- and company level SIMNET-based training; brigade staff BBS-based training

The platoon- and company-level training was designed for implementation at one fixed site and one mobile site configuration, and users were to be Army National Guard (ARNG) units. The brigade staff training, on the other hand, was designed for implementation at the user units' locations, and each implementation would vary in terms of observer teams, simulation support and configuration, time available, and the particular training needs and desires of the unit in training.

In Activity 4.1, the task is to design a TSP structure that addresses all of the known situations for implementation, so that the materials developed in Activity 4.2 can be used in as many of those situations as possible. There is no reason to wait until the completion of Phase 3 to collect this information; you have probably been accumulating it all along.

Activity 4.1 Design training support package structure

Product/Outcome: Design outline for TSP components that considers (at a minimum):

- ✓ use of tactical and other scenario materials,
- ✓ unit preparation (training audience),
- ✓ materials to aid or train other participants,
- ✓ simulation needs, and
- ✓ exercise management.

Formative Evaluation: Proponent review; review by representative users.

The design outline for the TSP is not a final product. The activity is included in this phase in order to focus your attention on the need for some careful analysis of user needs and situation variables that have an impact on the utility of the TSP.

In order to perform this activity, you will need to know (or find out about) the intended implementation situations. Some of the things to consider and discover are:

- *Tactical and other Scenario Materials:*
 - What situational (tactical) materials are needed?
 - When will the situational materials be handed out or released or distributed?
 - Who will do distribution, and how will they know when to do it?
 - Who gets copies, and of which parts?
- *Training Audience:*
 - How will the training audience be prepared for the program?
 - Will they have done this kind of program before?
 - How much time will they have for preparation?
 - What will they already know?
 - What misconceptions are possible and how can they be reduced?
 - Do they have computer support in case the TSP could go on CD-ROM or in case some of the preparation could be PC-based multimedia?

- *Observers:*
 - Who will the observers be?
 - Are they trained and experienced as observers, or does their experience no more than mirror that of the training audience?
 - Are they of at least peer rank with the training audience?
 - What should their role be (e.g., coach, mentor, evaluator)?
 - How much do they need in the way of correct performance guides?
 - Will they know how to conduct AARs?
 - Do they need AAR job aids?
 - How should they prepare for AARs?
 - Will they have time for extensive AAR preparation?
- *Additional Personnel:*
 - What other personnel are needed (e.g., roleplayers, interactors)?
 - How will they prepare or be trained?
 - Who will train them?
 - What job aids or guides will they need?
- *Simulation Materials:*
 - How will the simulation be loaded with the training scenario tapes or files?
 - Who will load the simulation files and check them?
 - How will they know what to do? What skills or knowledge will they already have, and what do you need to tell them in addition?
- *Program management/administration:*
 - Who will administer or manage the training?
 - Will the manager(s)
 - Have experience with structured simulation-based programs?
 - Be available for preparation and execution of the training?
 - Have assistants?
 - Be at least a peer (in rank) of the senior person in the training audience?
 - Have print-plant support (for paper-based TSP materials) and/or computer support (for PC-based multimedia TSP materials)?
- *TSP Packaging:*
 - How will the TSP be packaged and distributed?

These are just some of the considerations that you will need to address.

The final question in the long list above deserves some special discussion: How will the TSP be packaged and distributed? As the developer, you may actually be considering *two levels* of packaging:

- On one level, you are deciding how to create a “shelf” version of the materials, sometimes referred to as “The Box.” This is the master set that serves as a copy-ready version; it may get sent to an implementation site, but generally is *not* the set that gets distributed to lots of users.
- The second version is “The Distribution Set.” It consists of copies of materials in The Box version that are assembled and distributed as appropriate to the exercise participants and administrators.

As an organizing structure for thinking about TSPs, we have found the five-part structure presented in TRADOC Regulation 350-70 (Department of the Army, 1995) to be useful. It is diagrammed in Figure 6. The five parts are:

- Tactical materials.
- Unit materials.
- Train-the-trainer materials.
- Simulation materials.
- Administrative materials.

This structure is more akin to the description of The Box than to The Distribution Set of the TSP. In most situations, The Box version is smaller than The Distribution Set. This is because there will usually need to be multiple copies of some TSP items for multiple users. While The Box might contain only one copy of the item, The Distribution Set would include multiple copies.

What you prepare will likely be The Box (the shelf version). Certainly, The Box could be an exact model of The Distribution Set. For example, if three copies of an OPORD are needed in implementation for three members of the training audience, then The Box *might* contain three identical copies of the OPORD. It is more likely that it will contain only one.

Other items, though, will almost certainly occur in multiple copies in The Box. For example, all members of the training audience may get individual guides, in which the first section is always the same. Rather than providing just one copy of that section and requiring the administration team to run copies and insert it into multiple guides, it would likely be included as a part of each copy-ready guide.

THE TRAINING SUPPORT PACKAGE

Tactical materials:

- OPORDs and other mission-specific materials
- Prepared messages and scripted materials
- Descriptions of personnel and equipment status

Unit preparation materials:

- Guidance on exercise selection
- Guidance on unit preparation
- Description of time, personnel, and facility requirements

Annex C, OPORD 95-53

Guidance for other participants:

- Observer materials on task performance and feedback sessions
- Instructions for operation of the simulation components
- Guidance for roleplayers

Administrative guidance for managers:

- Instructions for setting up the training
- Instructions for controlling scenario events

Simulation tapes and documentation:

- Initialize the system
- Provide starting conditions
- Show graphic control measures

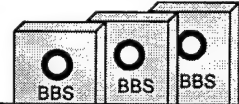


Figure 4. Five components of the TSP.

Thus the decision must be made whether (a) to provide one copy of an item in The Box and require that *various numbers* of copies be made, or (b) to provide multiples of each item and require that *one* copy be made of each item in The Box. The decision will usually depend on the *size* of the item (big items being provided only once in The Box) and the *location* of the item (if stand-alone, then provided only once in The Box; if part of another item, then provided with each of the other items).

EXAMPLE: Implementation situation, TSP configuration, and comparison between The Box and The Distribution Set

NOTE: For all three of the programs described below, The Box was provided to the exercise implementers, who in turn prepared The Distribution Set, following instructions in The Box.

- (1) **The Virtual Training Program:** Platoon-, company-, battalion-, and brigade-level training, for maneuver and fire support elements, execution only. To be implemented at one fixed site and 2 mobile sites, using a dedicated O/C team. Uses SIMNET or Janus. Approximately 112 independent exercises provided.

Because the exercises were to be used in very limited situations (essentially one site, with a dedicated O/C team to guide the user units during all planning, preparation, and conduct of the exercise), the platoon- and company-level TSP was easily conceptualized as having three parts (i.e., trainer, trainee, and tactical materials). Its relatively simple organization and content are shown in Figure 5.

- (2) **The COBRAS Brigade Staff Exercise:** Brigade staff training for combat, combat support, and combat service support, on planning, preparation, and execution (including consolidation and reorganization). For export to brigade training sites and implemented within brigade or division resources.

For this program, there were many more likely variations in implementation, as well as many more participants, and the list of considerations grew accordingly. The TSP addresses many more facets of implementation than did the platoon- and company-level product. Figure 6 shows the TSP components for the brigade-level exercise.

- (3) **The COBRAS Brigade Staff Vignettes:** Brigade staff small group training vignettes, for 2-14 participants each. 25 independent event-focused exercises, requiring mostly only live simulation. Conduct requires 1/2 - 1 day each, and all preparation, control, and feedback is coordinated by the brigade executive officer (XO).

The vignettes were envisioned as being used in the brigade's "Thursday morning staff development" situations. Thus the amount of TSP materials and preparation requirements was severely restricted. The vignette TSPs have the simplest structure of these related programs; it is shown in Figure 7.

But there is another alternative that may require consideration: As computers and databases become more accessible to users, it is likely that The Box will be replaced by The CD-ROM. A database management system will enable the training manager to indicate implementation options, and will construct the appropriate TSP for that implementation. The constructed TSP will then be printed or otherwise output for the users, as The Distribution Set. In this case, the shelf version (The CD-ROM) should *not* contain any item more than once. Rather, the database links should be constructed in such a way that the right items get added to the appropriate sets of distribution materials. In this way, corrections or changes to individual pieces can be made just one time and populated throughout the TSP.

TSP Components and Structure for the Virtual Training Program (VTP)		
TSP Component	Copies in The Box/ Distribution Set	Distribution
Orientation Guide: Overview of the exercises; description of each exercise (of 112)	1/1	1 per unit, to assist in exercise selection and planning
Preparation Materials: Overview of the exercise; general information on how to get ready, participants, and what to expect. Preview and task demonstration videotapes.	1/1	1 per unit, to assist them in preparation
Observer/Controller Materials: Instructions on how to prepare the unit; what to hand out and when; how to control the simulation events; how to conduct orientation, tactical events, and AARs.	1/variable	1 per O/C (non-expendable)
Tactical Materials (one volume per mission): OPORDs for the user-level unit and the higher level unit; overlays; exercise intent narratives; exercise event guides showing O/C actions, simulation activity, unit responses expected, training objectives; exercise-specific AAR worksheets, job aids, and take home package worksheets.	1/variable	1 set of orders and overlays, specific to the selected exercises, for the user unit, to be used in preparation. 1 set of all contents, specific to the selected exercises, for the O/Cs assigned to that execution. Most parts expended during the exercise. Number of O/Cs required for different exercises varies (between 1 and 10).
Simulation Materials: Simulation documentation and tapes.	1/1	For use in initializing the appropriate system for each exercise.

Figure 5. TSP structure and distribution plan for the Virtual Training Program (VTP).

TSP Components and Structure for the COBRAS Brigade Staff Exercise (page 1 of 2)		
TSP Component	Copies in The Box/ Distribution Set	Distribution
Orientation Guide: Overview of the exercises; description of each exercise, how to initiate preparation.	1/1	1 per unit, to assist in exercise selection and planning.
Training Audience Preparation Materials: Overview of the exercise; general information on how to get ready, participants, and what to expect; list of training objectives for each primary training audience member.	1/16	1 per primary training audience member, with the specific task list for that individual and the selected mission.
Exercise Director, COBRAS Coordinator, and BLUFOR Controller Materials: Instructions on how to plan for the exercise; working with the brigade to select implementation options; working with the simulation site to initiate preparation and implement the exercise; required resources; training participants (roleplayers and interactors); what to copy and distribute, and when; how to control the simulation and other events for each mission.	1/3	1 per person, to guide them in preparation and during the exercise.
Roleplayer Materials: Specifics of the unit they represent; tactical and training intent for the exercise and each mission; rules of engagement; using the simulation. Division response cell guide contains scripted (radio) and Tactical Fax (TACFAX) messages.	1 each/ 1 each	1 per roleplayer cell, to be used during preparation, exercise rehearsal, and exercise conduct. 12 role-specific guides, for division response cell, subordinate units, supporting CS and CSS units, and OPFOR.
Observer Materials: Overview of the exercise; general information on how to get ready, how to coach, provide feedback, and conduct the AAR (Senior Observer only); list of training objectives for the primary training audience member each will observe, for the selected mission.	1/variable	1 per observer, with the specific task list(s) for that individual and the selected mission. Between 11 and 16 observers required, depending on availability of experts in the different functions to be tapped as observers.
AAR Materials: Mission-specific guidance and slides to be used in AARs	1/1	For use by the Senior Observer in conducting the brigade AARs. Time for AAR preparation is constrained to about one hour, up to 8 AARs per mission may be conducted.

Figure 6. TSP structure and distribution plan for the COBRAS Brigade Staff Exercise.

Continued on next page

TSP Components and Structure for the COBRAS Brigade Staff Exercise (page 2 of 2)

TSP Component	Copies in The Box/ Distribution Set	Distribution
Sample Brigade Products: For use by observers in illustrating general form and content of brigade planning products.	1/1	Available for use by observers.
Tactical Materials		
OPORDs for the corps and division; overlays; intelligence products.	1/5	Specific to the selected mission. 2 sets of orders and overlays for the brigade, handed out as first activity of the exercise 1 set of orders each for observer team, division response cell, and Exercise Director, to be used in preparation 1 set of overlays for division response cell 1 set of intelligence products for division response cell, for dissemination to the brigade according to the tactical situation.
Current situation descriptions and unit readiness levels; mission specific.	1/variable	Mission- and unit-specific descriptions for each roleplayer of subordinate and supporting units, for each training audience member and observer.
Simulation Materials: Basic TO&E and initialization tapes for Brigade/Battalion Battle Simulation (BBS), complete documentation of tape data.	1/1	Simulation center; appropriate mission-specific tapes loaded to initialize exercise. Documentation available to permit modifications, to be used in case of incompatible simulation upgrades.
Interactor Materials: How to use the simulation to accomplish required tasks in controlling units.	1 of each/ variable	1 of the appropriate guide for each BBS workstation: 9 (BLUFOR), 2 (OPFOR), 1 (EXCON - Division).
Simulation Center Materials: Instructions and guidance for simulation center personnel on initialization and control of the exercise, other participants, training interactors.	1/1	Simulations Center manager, for use in planning, preparation, and conduct of exercises.

Figure 6. TSP structure and distribution plan for the COBRAS Brigade Staff Exercise (continued).

TSP Components and Structure for the COBRAS Brigade Staff Vignettes		
TSP Component	Copies in The Box/ Distribution Set	Distribution
Guide to Use and Implementation of COBRAS Vignettes: Overview of the vignette intents; how to select, prepare, and conduct.	1/1	1 per unit, to assist in vignette selection and planning.
Training Coordinator Materials: Overview of the vignette scope, participants, and tasks; information on how to get ready; list of training objectives; how to initiate and control the vignette; AAR questions.	1 each/ 1 each	1 per vignette (of 25).
Training Participant Materials: Overview of the vignette scope and tasks; information on how to get ready; list of training objectives and references.	1/variable	1 per participant (vignette-specific); participants range from 2 to 14.
Preparation Materials: Selected tactical materials to provide the setting and situation for the vignette problem.	1/variable	According to vignette-specific instructions; used by participants to prepare for the vignette conduct.
Execution Materials: Selected tactical materials to cue and shape the vignette problem.	1/variable	According to vignette-specific instructions; used by participants during vignette conduct.
Job Aid Materials: Provided for selected vignettes to help participants perform the tasks.	1/variable	According to vignette-specific instructions; used by participants during vignette conduct.
Sample Products: For use to illustrating general form and content of brigade staff products.	1/1	Vignette-specific; available for use by Training Coordinator.
Support Coordinator Materials: For use in simulation-supported vignettes; guidance for roleplayers and interactors; simulation tapes and documentation.	1/1	Guide and instructions to Support Coordinator for distribution to roleplayers and interactors. Tapes and documentation to Simulation Center Manager.

Figure 7. TSP structure and distribution plan for the COBRAS Brigade Staff Vignettes.

Formative Evaluation

As with the interim product in Phase 1, the facts and assumptions that you document about implementation should be verified by your proponent. Additionally, an early check on your proposed design by some potential users will give you valuable information. The most useful feedback will likely come from leaders and training officers of units who would use the materials and from simulation site managers.

Activity 4.2 Prepare training support package (TSP) materials

Product/Outcome: The TSP, as outlined in Activity 4.1

Formative Evaluation: Expert reviews, trials with representative personnel

This activity makes use of all of the information and development work that has gone on to date. This is the culmination of the development, leading up to the implementation.

If, however, you discover any discrepancies between what should go into the TSP and what you have available, then you may need to revisit one or more of the earlier activities. Sometimes you'll just engineer the missing piece of material; other times you may need to make some more sweeping changes in order to maintain the correspondence among all of the package components.

The most important considerations that affect your efforts for this activity are the typical instructional design considerations: to make the materials not only technically correct and complete, but also situation- and user-friendly. The outline for TSP that you designed in Activity 4.1 serves as your blueprint here.

Broadly defined, the TSP is everything that is needed to support every aspect of implementation of the program. Every TSP will be different, because every TSP is specific to the particular training program it supports. The remainder of this section contains some suggestions drawn from our experience about how to prepare a TSP. But you should be ready to improvise as necessary so that the TSP you develop is appropriate for the training you develop.

If you are an instructional developer, then you understand the principles of materials development that can make the program accessible; if not, the points below will highlight some important things that you can do to make sure that the users can, in fact, use the materials.

- The organization of the materials has to be precise and clear. The user must be able to find the critical information quickly. While it may also be important to include background, explanation, justification, and so on, the critical how-to information must be clearly visible. Think about the difference between “just in case” presentation that includes all of the whys and wherefores, and “just in time” presentation that is instructional and directive, with a separate section of reasons why.
- Don’t be bound by too many traditional ideas of how training materials should look. You’re writing for users, and the desktop publishing people have done a lot to help specify what it takes to make materials useful. You should be aiming for materials that are easy to read and understand, using graphics where they aid in understanding. You are not writing a textbook (probably). But, of course, be aware of any layout and format restrictions that are already in place.
- Some of the user guides put out by computer manufacturers and software writers serve as useful models. Spend some time looking at them for ideas, or look at the VTP or COBRAS TSP materials. You’ll probably notice lots of white space, use of graphics and look-up tables, icons and symbols that catch the user’s attention, lines or borders that help to group relevant material, headers and footers that help the user know where he/she is, and so on.
- Use job aids. These will help the user know what he has to learn beforehand, and what he can look up when necessary.

EXAMPLE: Using job aids

Some job aids that have been useful in currently used programs include:

- A planning and preparation timeline of events leading up to the exercise
- A list of the personnel to be tasked
- A chart showing the materials in the TSP and who gets what
- A diagram of a likely simulation site layout
- An event list of the scenario storyline for the exercise, showing both higher echelon and OPFOR event that cue the unit tasks
- A chart of scripted messages for use by the higher echelon response cell

- As you package the materials into The Box or The CD-ROM, consider preparing a “Read Me First” document that will point to the rest of the TSP, so that the training manager knows where to start.

Formative Evaluation

The final formative evaluation is more formal than the earlier reviews. In order to insure that all of the materials are both (a) correct and (b) user-friendly, two formative evaluation steps should be initiated:

- *Expert Review.* Expert reviews of the simulation-connected parts, the training content, and the instructional design will insure face validity as well as helping you to refine all of the components of the training program and package. There are several levels of expert review recommended:
 - Individuals who are experts on the simulation and its components should make sure that your exercise materials are appropriate for the technology; they should pay particular attention to the materials used to program or configure the simulation for the scenario.
 - Individuals who are experts on the doctrinal issues for the mission should review the materials to be used during orientation, execution, and the AAR for doctrinal accuracy.
 - Someone who is familiar with the needs and resource constraints of the target units should check the advance materials and program management materials.
 - A review by instructional design experts can help you with the presentation of all of the information.
 - An internal roleplay of the unpacking, reproducing, and distributing processes, using the instructions in the TSP, will help to catch disconnects in the instructions.
- *Trial(s).* Trials that involve representative personnel acting as participants will provide evidence of the usability of the materials. Data collection will be standardized and intensive, involving individual and group interviews and detailed observations of a wide variety of indicators. As with the pilots, you should have a formal plan for the trials. Some of the important considerations include:
 - Involve actual units and other target personnel in as many of the roles as possible (in contrast to the pilots in Activity 3.3, where you may have used surrogate participants).
 - Use TSP materials that are as close to “perfect” as you can get; don’t plan on using available developers to interpret the materials to the users. You want the users to diligently attempt to use the materials as they are intended to be used.
 - However, you may also need to interrupt the exercise at times to determine what went wrong or to work around a fatal error.

- During exercise preparation and the conduct of the exercise itself, collect data: observations, opinions and suggestions, discussions of ways of fixing things that aren't yet right. After the training, you will interview the participants to get their reactions to the training content and materials.
- Use a variety of methods to collect the information: observations, group discussions, structured interviews, questionnaires and surveys, video- and audio-tapes.
- The aspects of the program that are best examined during a trial include verification of assumptions and expectations, assessment or refinement of the methods for conducting the exercise, evaluation of the clarity and utility of the materials, and judgment of the completeness of the materials and absence of extraneous material.
- Document your formative evaluation trial plan: participants, process, data collection methods, and any caveats or alibis about how the trial is conducted and how that differs from the intended implementation.

If you expect to have a dedicated observer/controller team during the actual implementation, you should try to involve them also in the trials. You will need to train them in the roles and responsibilities specific to these exercises. Section 4 of the original methodology guide (Campbell, Campbell, Sanders, Flynn, & Myers, 1995) discusses O/C training at length.

These two kinds of formative evaluation processes (expert reviews and trials) should be done for every component of the TSP. All of the information is collected for the purpose of revising the materials. Ideally, once materials are revised, another trial should be conducted, until all of the flaws are worked out or until your resources and time are expended.

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APPENDIX

Guide to Development of Structured Simulation-Based Training

OUTLINE OF THE METHODOLOGY

Phase 1. Initial Decisions

Activity 1. Document Initial Decisions

**Product or
outcome**

Documentation of decisions


**Formative
evaluation**


Proponent review

*Decision areas
(pages 7-10
of the Guide)*

1. Target training audience
 2. Training context
 - Mission type
 - Enemy type
 - Terrain/locale
 - Unit type
 3. Simulation technology
 4. Other, e.g.:
 - Exercise time
 - Number of entry points
 - Nature of entry points
 - Linkages to other programs
 - Guidance for training priorities
 - Trainer and other resources
-

Phase 2. Designate Training Objectives

 **NOTE** Either Activity 2.2 or Activity 2.3 can be done first. Do whichever you think will reduce the task list *most*.

 **NOTE** Phase 2 and Phase 3 (designing the scenario and exercise structure) will probably be iterative.

Activity 2.1 Identify Task Sources, Tasks, and Standards

Product or outcome	Tasks and standards; task sources
---------------------------	-----------------------------------

Formative evaluation	Internal and proponent review
-----------------------------	-------------------------------

*Sources
(pages 12-13
of the Guide)*

- Doctrinal — ARTEP-MTPs, FMs, proponent agency lists
 - Other— job and task analysis
-

*Task detailing
(page 13
of the Guide)*

- Task statement — lowest level of collective behavior that has accompanying conditions and standards
 - Conditions statement — description of situation, environment, and initiating cues that should cause a task to be performed
 - Standard — statement of correct, acceptable, ideal accomplishment of a task
-

Activity 2.2 Refine Task List for Simulation Support

Product or outcome	Task list annotated to show tasks that can be fully or partially performed and observed in the simulation
---------------------------	---

Formative evaluation	Internal and proponent review
-----------------------------	-------------------------------

Judgments of simulation support (pages 14-15 of the Guide)

- Use a rule-based system
 - Use more than one judge; reconcile judgments
 - Use task expert and simulation expert
 - Document partial trainability (which parts)
 - Determine whether the task:
 - *Can be performed* in simulation
 - *Should be trained* in simulation setting
 - *Can be performed* in the simulation setting, though not simulation-supported
-

Activity 2.3 Select Tasks That Support the Mission

Product or outcome	Reduced task list, annotated to show the tasks (or parts of tasks) that will be performed and can be observed in the context of the mission, along with appropriate conditions and standards
---------------------------	--

Formative evaluation	Proponent review; training and doctrine agency review
-----------------------------	---

Selecting tasks (and standards) (page 16 of the Guide)

- Are part of the mission(s) to be training (per Activity 1)
 - *Can* and *should* be trained in the simulation, can be *observed*
 - “Other” guidance for training priorities satisfied
-

Phase 3. Design Scenario and Exercise Structure



NOTE

Phase 2 and Phase 3 (designing the scenario and exercise structure) will probably be iterative.

Phase 3 activities are closely tied and highly interdependent. Compare unit's and higher echelon's missions and scenario outlines frequently to ensure tactical correspondence.

*Task sequencing
(pages 17-18
of the Guide)*

Common sequencing approaches:

- Crawl-walk-run
 - Natural order
 - Hierarchical
 - Easy-to-difficult
-

Activity 3.1 Design the Scenario

**Product or
outcome**

Draft of the "concept of the operation" with sketch of graphic overlay, draft of unit OPORD, or other method of presentation; for training unit and higher echelons as necessary

**Formative
evaluation**

Map exercises

Continued on next page

Activity 3.1 Design the Scenario, Continued

*Design
principles
(page 19
of the Guide)*

1. Situation should be realistic
 - Cues match real-world conditions
 - Tactical materials resemble actual materials (1-2 levels up)
 - Plausible activities at higher echelons
 2. Enemy should be realistic
 - Organization, equipment, tactics, techniques, procedures consistent with its doctrine
 3. Real-time, real-space events
 - Minimal magic moves and reconstitution
 - Time only moves forward
 - Constant terrain
 - Partitions at natural breaks
-

*Components of
mission outline
(page 20
of the Guide)*

1. Initial locations (friendly and enemy)
 2. Major events list
 3. Participants (actual and notional, friendly and enemy)
 4. Terrain area or environment
 5. Task by event crosswalk
-

*Battle-oriented
exercise
products
(page 20
of the Guide)*

- Description of mission and commander's intent
 - Enemy plan (locations, objectives, mission, intent, etc.)
 - Terrain to support mission, sketch of graphic control measures
 - Scenario timeline showing friendly and enemy activities
-

Activity 3.2 Prepare Exercise Context and Specifications

Product or outcome

Context, specifications, and execution details for exercises

Formative evaluation

Simulation-controlled exercise to verify the following:

- Match between specifications and simulation
 - Suitability of terrain
 - Exercise length
 - Correlation of forces
-

*Product description
(page 22-23
of the Guide)*

1. Narrative/graphic representation
 2. Friendly and enemy situations
 - Equipment/personnel status
 - Recent events
 - Starting locations (approximate)
 3. Unit specifications at starting point
 - Unit identifiers and type unit, how represented
 - Initial status of each system
 4. Exercise ending point—approximate location or event
 5. Scenario description—exercise intent, i.e., overall objective, general statement of conditions
 6. Tasks/training objectives
-

Activity 3.3 Outline Events and Build Exercise

Product or outcome

Master event list showing cues, expected performance, and critical tasks or subtasks; simulation files

Formative evaluation
(page 25-26 of the Guide)

Pilot with knowledgeable personnel to check the following:

- Scenario and order are appropriate for terrain and events
 - Exercise specifications for all units are correct
 - Locations permit exercise to proceed as planned
 - Event cues cause tasks to happen
 - Performance is observable
 - Performance standards are clear and observable
-

Elements
(page 24 of the Guide)

- Cue to start event
 - Unit response
 - Task to be observed
-

Phase 4. Develop Training Support Package (TSP)



NOTE

TSPs are unique to the training programs they support.

Necessary inputs

- What will the implementation setting be?
 - Who are the users (implementers and training unit)?
 - How will they use the materials?
 - What should the materials help them do?
-

Activity 4.1 Design TSP Structure

Product or outcome

Design outline for TSP components that considers (at a minimum):

- Use of tactical and other scenario materials
 - Unit preparation (training audience)
 - Materials to aid or train other participants
 - Simulation needs
 - Exercise management
 - TSP packaging
-

Formative evaluation

Proponent review and review by representative users

Continued on next page

Activity 4.1 Design TSP Structure, Continued

*Considerations
(expanded list)
(pages 28-29
of the Guide)*

1. Tactical and other scenario materials
 - What is needed, when is it distributed, who gets it, how do they know what to do with it?
 2. Unit preparation (training audience)
 - Prior experience, current skill level, time available for preparation, what preparation is needed, what media for providing information?
 3. Materials to aid or train other participants
 - Who are the other participants (observers, roleplayers, interactors), prior experience, functions or roles, what job aids can be used?
 4. Simulation needs
 - How will scenario be transferred to simulation, who does it, what instructions needed?
 5. Exercise management
 - Who will manage the training, prior experience, resources?
 6. TSP packaging
 - How will the TSP be packaged and distributed?
 - Be aware of differences between the shelf (master) copy and distribution copy.
-

Activity 4.2 Prepare TSP Materials

Product or outcome

The TSP, as outlined in Activity 4.1.

Formative evaluation

Expert reviews, trials with representative personnel

*TSP principles
(page 38
of the Guide)*

- Clear organization
 - Easily readable and understandable appearance
 - Timely use of graphics and tables
 - Extensive use of appropriate job aids
-

*Expert review
guidelines
(page 39 of the
Guide)*

- Simulation experts for materials used to program or configure simulation
 - Doctrinal experts for tactical materials and AAR materials
 - Someone familiar with training needs and constraints for advance materials (unit preparation) and management materials
 - Instructional design experts for structure and presentation mode
 - Someone for roleplay of unpacking, reproducing, distributing
-

Continued on next page

Activity 4.2 Prepare TSP Materials, Continued

*Trial guidelines
(page 39-40
of the Guide)*

1. Use actual (representative) participants in all positions, if possible
 2. Use actual TSP materials
 3. Let participants use materials; intervene only in case of fatal errors
 4. Collect information via
 - Observations
 - Group discussions before, during, after exercise
 - Structured interviews
 - Questionnaires
 5. Focus on
 - Assumptions and expectations
 - Methods for conducting exercise
 - Clarity and utility of materials
 - Completeness of materials and absence of extraneous materials
 6. Have a formal plan
-